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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/725,448	12/03/2003	Yung-Jun Park	1349.1181	5426
21171 7590 09/13/2007 STAAS & HALSEY LLP SUITE 700 1201 NEW YORK AVENUE, N.W. WASHINGTON, DC 20005			EXAMINER LEE, JOHN W	
			ART UNIT 2624	PAPER NUMBER
			MAIL DATE 09/13/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

**Application No.**

10/725,448

**Applicant(s)**

PARK ET AL.

**Examiner**

John Wahnkyo Lee

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 09 July 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-9 and 11-13 is/are rejected.
- 7) ☐ Claim(s) 4 and 10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. The response received on 09 July 2007 has been placed in the file and was considered by the examiner. An action on the merits follows.

#### ***Response to Amendment***

2. The applicant's amendments filed on 09 July 2007 have been fully considered. A response to the amendment is provided below.

- I. Objection to the Specification

Applicant's amendment to the Abstract, which is part of the Specification, is persuasive. The objection is hereby withdrawn.

#### ***Response to Arguments***

3. Applicant's arguments filed on 09 July 2007 have been fully considered, but are not persuasive. A response to these arguments is provided below.

Regarding claim 1, the examiner agrees with the applicant that the frame mean calculator cannot read on the claim limitation of the compensation value calculation. However, it does not mean that Kim et al. does not disclose facts that can read on the compensation value calculation. Instead of the fame mean calculator, Kim et al. discloses a brightness compensator (Fig. 6-414) with a compensated mean level (col. 5, lines 10; equation (7), "Bm") and a brightness compensation value (col. 5, lines 10-13; equation (7), " $\Delta$ ") that is a preset by use of a predetermined compensation function

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according to the brightness value. Therefore, Kim et al. can be used as a reference that reads on claim 1.

Regarding claim 8, the applicant inserted "based on the calculated PDF." The examiner agrees Kim et al. does not disclose any facts that can read on "calculating an average ... PDF." However, by amending claim 8, it changes the scope of the claim, and a new ground rejection will be discussed later on.

Regarding claims 2 and 9, Kim et al. discloses all the claim limitations except the "PDF compensation unit comparing ...". However, Cahill discloses parts that can read on the "PDF compensation unit comparing..." and remedy the deficiencies of Kim et al. Cahill discloses and the plurality of probability density function is compared to check if it meets and is acceptable level of error respecting the histogram data (col. 6, lines 38-41), which can be read on the claim limitation, "a PDF compensation unit comparing

Regarding claims 7 and 13, Kim et al. does not disclose the claim limitation of claims 7 and 13, but Kim does. Kim discloses using pixel values based on grayscale value of colors- R, G, B, for the invention (fig.1 and 4; claims 5 and 6), which can be read on the claims and remedy deficiencies of Kim et al.

To response clearly of the applicant's amendments and arguments, arguments with respect to claims 1-13 have been considered. Claims 1-3, and 5-7 will be discussed with no new ground rejection, and claims 8-9 and 11-13 are moot in view of the new ground(s) of rejection.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 3, and 5-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Kim et al. (US 5,963,665).

Regarding claim 1, Kim discloses an apparatus for adaptive brightness control (Figs. 1-3 and 6; abstract), comprising: a probability density function (PDF) calculation unit (Figs. 1-106, 2-206, 3-306, and 4-406; "divider") calculating a PDF based on a distribution of pixel values of pixels of an input image signal (col. 4, lines 4-27; equations (1) and (2)); a compensation value calculation unit (Fig. 6) calculating an average value of the pixel values of the respective pixels (Figs. 4A, 4B, 5A, and 5B; col. 5, lines 9-10; col. 8, lines 63-67; equation (7), "B<sub>m</sub>"), and calculating a function having a predetermined slope according to a range of an average brightness value (Fig. 4A and 4B; col. 5, lines 10-13, "Δ"); and a pixel value compensation unit re-establishing the distribution of the pixel values based on the calculated function (col. 5, lines 20-30).

Regarding claim 3, Kim teaches that the first and second CDF calculator (fig. 6-408 and 410) calculate the cumulative density functions using the probability density function (col. 4, lines 28-38).

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Regarding claim 5, Kim discloses wherein the compensation value calculation unit (Fig. 6-414) includes: an average value calculation unit calculating an average pixel value (Figs. 4A, 4B, 5A, and 5B; col. 5, lines 9-10; col. 8, lines 63-67; equation (7), "Bm"); an average value range calculation unit setting a range of the calculated average pixel value (Figs. 4A, 4B, 5A, and 5B; col. 5, lines 9-13; col. 8, lines 63-67; equation (7), "Bm" and " $\Delta$ "); and a function value output unit outputting to the pixel value compensation unit a function corresponding to the range of the calculated average value (col. 5, lines 20-40).

Regarding claim 6, Kim discloses wherein the function (Fig. 4A and 4B; col. 5, lines 10-13, " $\Delta$ ") is one among a monotonic increasing function, a monotonic decreasing function, and a constant function (col. 5, lines 10-13, "a brightness compensation value  $\Delta$  that is a preset by use of a predetermined compensation function according to the brightness value").

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. (US 5,963,665) in view of Cahill (US 7,103,219).

Regarding claim 2, Kim discloses all the previous claim limitations and some of the claim limitations of claim 2- a cumulative distribution function (CDF) generation unit (Figs. 4-408 and 4-410 calculating a cumulative distribution function for the PDF re-established by the pixel value compensation unit (col. 4, lines 30-38; col. 7, lines 10-15); and a mapping unit re-establishing pixel values of the input image signal based on the cumulative distribution function (col. 5, lines 4-53). However, Kim does not disclose comparing the calculated function with values of the calculated PDF, but Cahill does. Cahill discloses and the plurality of probability density function is compared to check if it meets and is acceptable level of error respecting the histogram data (col. 6, lines 38-41). Moreover, Cahill teaches using Gaussian density function, which is an example of a probability density function having increasing and decreasing part, for an estimate of the brightness probability density function (col.8 lines 31-67; col. 9, lines 63).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made to use Cahill's method in Kim's image enhancing method to preserve the mean brightness of the given image while the contrast of the image in enhanced as suggested by Kim (col. 2, lines 1-2).

8. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. (US 5,963,665, hereinafter "Kim et al.") in view of Kim (US 6,018,588, hereinafter "Kim").

Regarding claim 7, Kim et al. discloses and teaches all the previous claim limitations except the claim limitations of claim 7. However, Kim discloses using pixel

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values based on grayscale value of colors- R, G, B, for the invention (fig.1 and 4; claims 5 and 6).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made to use Kim's method in Kim et al.'s image enhancing method to enhance image quality by varying a color signal based on the adjusted luminance as suggested by Kim (col. 2, lines 9-12).

9. Claims 8 and 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. (US 5,963,665) in view of Herley (US 2003/0063814).

Regarding claim 8, Kim discloses an adaptive brightness control method (Figs. 1-3 and 6; abstract), comprising: calculating a probability density function (PDF) (Figs. 1-106, 2-206, 3-306, and 4-406; "divider") based on a distribution of pixel values of respective pixels of an input image signal (col. 4, lines 4-27; equations (1) and (2)); calculating an average pixel value of the detected pixel values (Figs. 4A, 4B, 5A, and 5B; col. 5, lines 9-10; col. 8, lines 63-67; equation (7), "Bm"), and calculating a function having a predetermined slope according to a range of the average pixel value (Fig. 4A and 4B; col. 5, lines 10-13, " $\Delta$ "), and re-establishing the distribution of the pixel values based on the calculated function (col. 5, lines 20-30). However, Kim does not disclose calculating an average pixel value of the detected pixel values based on the calculated PDF, but Herley does (paragraph [0080]).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made to use Herley's method in Kim's image enhancing method



to preserve the mean brightness of the images while the contrast of the image is enhanced as suggested by Kim (col. 2, lines 11-18).

Regarding claim 11, Kim further discloses calculating the function having the predetermined slope comprises (col. 5, lines 9-13): calculating an average value of the pixel values (Figs. 4A, 4B, 5A, and 5B; col. 5, lines 9-10; col. 8, lines 63-67; equation (7), "B<sub>m</sub>"); setting a range of the calculated average pixel value (Figs. 4A, 4B, 5A, and 5B; col. 5, lines 9-13; col. 8, lines 63-67; equation (7), "B<sub>m</sub>" and " $\Delta$ "); and calculating a function corresponding to the range of the calculated average pixel value (col. 5, lines 9-40).

Regarding claim 12, Kim further discloses that the function is one of a monotonic increasing function, a monotonic decreasing function, and a constant function (col. 5, lines 10-13, "a brightness compensation value  $\Delta$  that is a preset by use of a predetermined compensation function according to the brightness value").

10. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. (US 5,963,665) in view of Herley (US 2003/0063814), and further in view of Cahill (US 7,103,219).

Regarding claim 9, Kim and Herley discloses all the previous claim limitations and some of the claim limitations of claim 9- calculating a cumulative distribution function for the PDF which has the increased and decreased PDF values (Kim, Figs. 4-408 and 4-410; col. 4, lines 30-38; col. 7, lines 10-15); and re-establishing pixel values of the input image signal based on the cumulative distribution function (Kim, col. 5, lines

4-53). However, Kim and Herley do not disclose comparing the calculated function with values of the calculated PDF, but Cahill does. Cahill discloses and the plurality of probability density function is compared to check if it meets and is acceptable level of error respecting the histogram data (col. 6, lines 38-41). Moreover, Cahill teaches using Gaussian density function, which is an example of a probability density function having increasing and decreasing part, for an estimate of the brightness probability density function (col.8 lines 31-67; col. 9, lines 63).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made to use Herley's method and Cahill's method in Kim's image enhancing method to preserve the mean brightness of the given image while the contrast of the image is enhanced as suggested by Kim (col. 2, lines 1-2).

11. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. (US 5,963,665, hereinafter "Kim et al.") in view of Herley (US 2003/0063814), and further in view of Kim (US 6,018,588, hereinafter "Kim").

Regarding claim 13, Kim et al and Herley disclose and teach all the previous claim limitations except the claim limitations of claim 13. However, Kim discloses using pixel values based on grayscale value of colors- R, G, B, for the invention (fig.1 and 4; claims 5 and 6).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made to use Herley's method and Kim's method in Kim et al.'s image enhancing method to enhance image quality by varying a color signal based on the adjusted luminance as suggested by Kim (col. 2, lines 9-12).

***Allowable Subject Matter***

12. Claims 4 and 10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. It seems claims 4 and 10 appears to be free from prior art.

***Conclusion***

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Wahnkyo Lee whose telephone number is (571) 272-9554. The examiner can normally be reached on Monday - Friday (Alt.) 7:30 a.m. - 5:00 p.m..

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on (571) 272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

John W. Lee  
(AU 2624)

  
JINGGE WU  
SUPERVISORY PATENT EXAMINER